

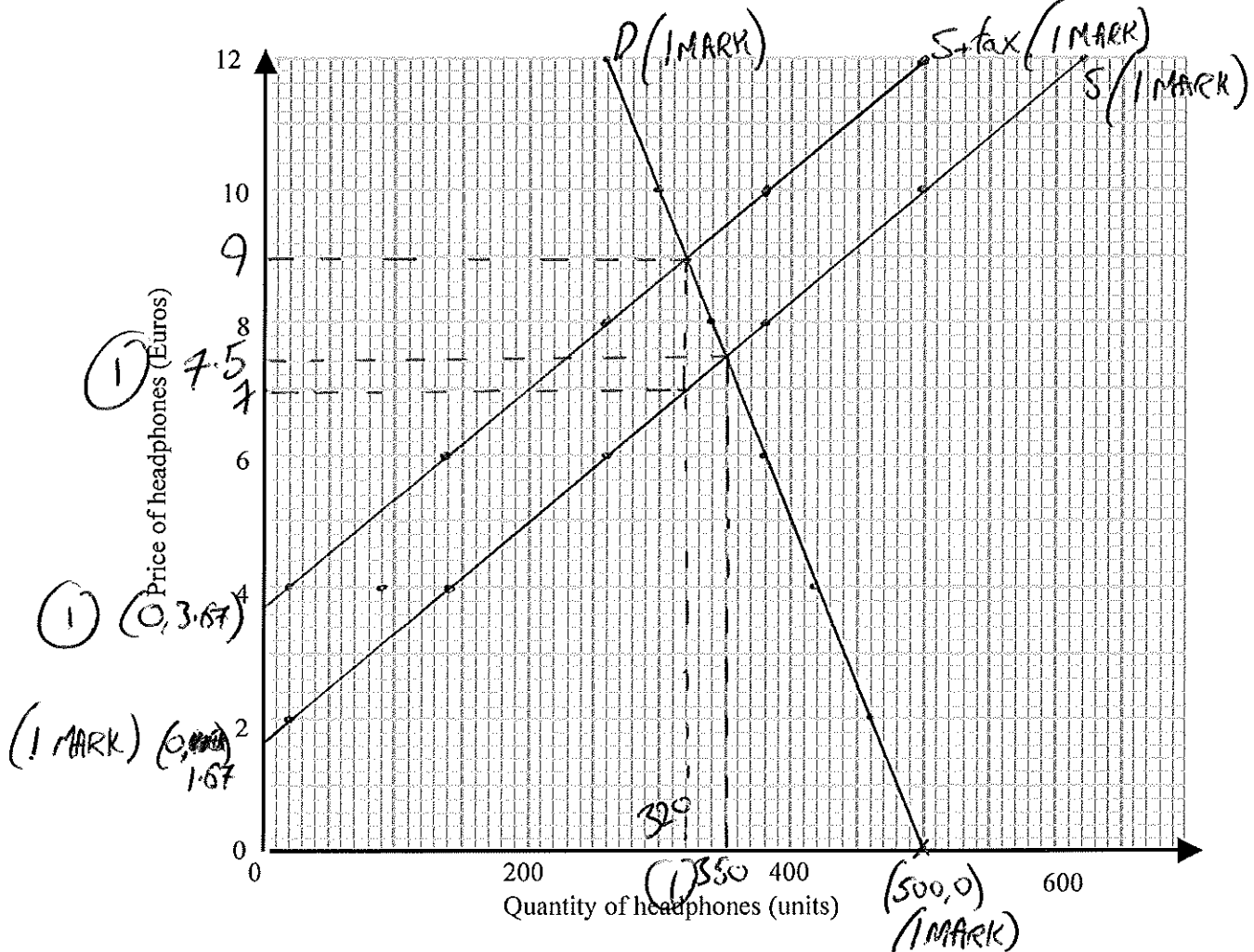
1. The daily supply and demand curves for headphones in a city are given by

$$Q_S = -100 + 60P$$

$$Q_D = 500 - 20P$$

Where Q_S and Q_D are the quantities in units and P is the price in Euros

- (a) Construct the supply and demand curves on the graph below and identify the Q intercept for the demand curve and the P intercept for the supply curve. [4 marks]



- (b) Calculate the equilibrium price and quantity and identify both of these on the graph. [4 marks]

$$Q_S = Q_D$$

$$-100 + 60P = 500 - 20P$$

$$80P = 600$$

$$P = 7.5€$$

$$Equl Q = 350 units (2 MARKS)$$

(This question continues on the following page)

The government decides to impose a specific tax of €2.00 per headphone.

- (c) Distinguish between a specific (flat rate) tax and ad-valorem tax [2 marks]

Specific tax is a specific monetary amount added to the price (regardless of price)

Ad valorem is a tax that is a percentage of the selling price.

- (d) State the equation for the new supply function after the imposition of the specific tax. [1 mark]

$$Q_{S2} = -100 + 60(P-2)$$

$$Q_{S2} = -220 + 60P$$

- (e) Draw a new curve on the graph to reflect the imposition of this tax and identify the new P intercept of this curve. [2 marks]

- (f) Explain, with reference to the figures, why the new equilibrium price is not €2.00 higher than the original equilibrium price. [4 marks]

At original equilibrium price (7.50) there is excess demand. This will drive price up + as price rises there is a contraction along demand curve + an extension along new supply curve. As demand is not perfectly elastic price does not rise by €2.00.

- (g) Calculate the incidence of tax on consumers and the incidence of tax on producers (i.e. what proportion of the tax is paid by producers and consumers) [2 marks]

$$\text{Incidence of tax on consumers} = (9 - 7.5) \\ = \frac{1.5}{2} = \frac{3}{4} \text{ or } 75\% \text{ (mark)}$$

~~Decrease on producers~~ $\frac{0.5}{2} = \frac{1}{4}$ or 25%. (1)

- (h) Calculate the change in consumer surplus as a result of the imposition of this tax.

\Rightarrow You need to calculate the P intercept of the demand curve = 0 = 500 - 20P $20P = 500$ $P = \text{€}25$. [2 marks]

ORIGINAL CON. SURPLUS = $\frac{1}{2} \times 350 \times (25 - 7.5) = 3,062.5 \text{€}$

NEW CON. SURPLUS = $\frac{1}{2} \times 320 \times (25 - 9) = 2,560 \text{€}$

CHANGE IN CON. SURPLUS = $\text{€}502.5$ Decrease.

- (i) Calculate the change in producer surplus as a result of the imposition of this tax.

[2 marks] (17)

PRODUCER SURPLUS BEFORE = $\frac{1}{2} \times 350 \times (7.5 - 1.67)$ OR 1015. OR 1032.5

= $\text{€}1020.83$

PRODUCER SURPLUS AFTER = $\frac{1}{2} \times 320 \times (7 - 1.67)$ 848 (17) varies 884.

= $\text{€}853.33$

FALL OFF $\text{€}167.50$ - ANSWER MAY VARY

- (j) Calculate the deadweight loss to society as a result of the imposition of this tax.

[2 marks]

$\frac{1}{2} \times 2 \times 30 = 30 \text{€}$

2. The table below shows the income tax rates that apply to different ranges of earnings for workers in Hong Kong.

Income (HK\$)	Income tax rate (%)
0 - 40,000	2%
40,001 - 80,000	7%
80,001 - 120,000	12%
120,001 +	17%

- 1) Raymond (low income) earns HK\$ 65,000 per year and spends HK\$ 5,000 on cigarettes, of which 50% is tobacco duty.
- 2) Alison (middle income) earns HK\$ 100,000 per year and spends HK\$ 7,500 on cigarettes, of which 50% is tobacco duty.
- 3) Hursh (high income) earns HK\$ 260,000 per year and spends HK\$ 14,500 on cigarettes, of which 50% is tobacco duty.

(a) Distinguish between income tax and tobacco (excise) duties.

[2 marks]

Income tax - direct tax - taken directly from taxpayer
cannot be passed on to another body.
Tobacco duty - indirect tax - tax can be passed
from one body on to another

(b) Calculate the Income Tax payable by individuals above as a percentage of their income:

[6 marks]

Raymond... $2\% \text{ on } 40,000 = \text{HK\$ } 800$
 $7\% \text{ on } 25,000 = \text{HK\$ } 1,750$ 3.92%
 $800 + 1,750 = 2,550 / 65,000 = 3.92\%$

Alison... $2\% \text{ on } 40,000 = \text{HK\$ } 800$
 $7\% \text{ on } 40,000 = \text{HK\$ } 2,800$
 $12\% \text{ on } 20,000 = \text{HK\$ } 2,400$
 $800 + 2,800 + 2,400 = 6,000 / 100,000 = 6\%$

Hursh: $\$800 + \$2,800 + (12\% \text{ on } 40,000) + (17\% \text{ of } 140,000)$

$$\frac{32,200}{260,000} = 12.38\%$$

(c) Calculate the amount of **tobacco duty** paid by Raymond, Alison and Hursh as a percentage of their income.

[3 marks]

Raymond: $(50,000 \times 50\%) = 25,000$
 $\frac{25,000}{65,000} = 3.85\%$

Alison: $(7,500 \times 50\%) = 3,750$
 $\frac{3,750}{100,000} = 3.75\%$

Hursh: $(14,500 \times 50\%) = 7,250$
 $\frac{7,250}{260,000} = 2.79\%$

(d) With reference to the concepts of average rates of tax, use the data from the table and your answers to (b) and (c) to explain whether income tax is progressive or regressive and whether tobacco duty is progressive or regressive. MUST REFER TO NUMBERS [4 marks]

Income tax - progressive - as income rises, proportion of income that is paid / as tax rises - 65,000 - ave rate of tax = 3.92%
 Alison - 100,000 - ave tax rate = 3.75%
 Regressive - Income ↑ ave rate of tax ↓ Raymond - 3.85%
 Hursh - 2.79%

(e) Give one reason why governments impose taxes on tobacco products

[2 marks]

- ① Raise revenue for government expenditure
- ② Reduce consumption of taxes + ∴ -ve externalities.

(f) Calculate the average rate of total tax (income + tobacco duty) paid by Raymond, Alison and Hursh as a percentage of their individual incomes. [3 marks]

Raymond:
$$\frac{(1750 + 2500)}{65,000} = 6.89\% \text{ } 7.77\%$$

Alison:
$$\frac{(6,000 + 3,750)}{100,000} = 9.75\%$$

Hursh:
$$\frac{(32,200 + 7,250)}{260,000} = 15.17\%$$

f) Explain, with the use of examples, how income tax can be used as both a tool of demand side management and a supply side policy. [5 marks]

Income tax affects the level of consumption by households - consumption is a component of GDP. Therefore, inc. tax can directly affect the level of GDP demand.

Income tax is also used to affect incentives. Lower income tax should encourage people to work harder, look for jobs + therefore affect productivity + supply.

Total marks for Question 2: 25 marks

3. The following equations describe the daily demand for and supply of Euros (€) in December 2010, where e is the price of the Euro expressed in US\$, Q_d is the quantity of Euros demanded per day and Q_s is the quantity of Euros supplied per day (in billions).

$$Q_d = 352.92 - 6e$$

$$Q_s = 338.4 + 5e$$

- [a] Determine the exchange rate of the Euro in US\$ and the volume of Euros traded per day.

[3 marks]

$$Q_d = Q_s$$

$$352.92 - 6e = 338.4 + 5e$$

$$1/e = 14.52$$

$$e = \$1.32 \text{ per Euro} \quad (2 \text{ marks})$$

Substitute e into Q_d/Q_s $352.92 - 6 \times 1.32$

$$= 345 \text{ bn Euros per day} \quad (1 \text{ mark})$$

- [b] Using the exchange rate determined above, calculate the how much it would cost in Euro's for a German to buy an imported kayak from the US, priced at \$250 and how much it would cost an American to buy a bottle of imported French wine, priced at € 7.50. [2 marks]

$$\text{Kayak} \Rightarrow 250 / 1.32 = €189.39 \quad (1 \text{ mark})$$

$$\text{Wine} \Rightarrow 7.50 \times 1.32 = \$9.9 \quad (1 \text{ mark})$$

- [c] Using the original exchange rate calculated above, explain what should happen to the price of American kayaks in Germany and French wine in the US if the Euro appreciated against the US\$.

[4 marks]

If Euro appreciates against US\$ it means that one Euro will buy you more US\$ i.e. $1€ > \$1.32$

This will make the price of kayaks cheaper $< €189.32$ (2 marks)

Make the price of wine more expensive $> \$9.9$ (2 marks)

[d] State two factors that may have caused the Euro to appreciate against the US\$. [2 marks]

ANY TWO FROM

- ⇒ Increase in EU exports to US
- ⇒ Higher rates of interest in Euro banks relative to US
- ⇒ Speculators buying Euro and/or sell dollar. etc.

[e] Given the data below for France's 2008-09 Balance of Payments (extract), calculate the values for X1, X2, X3 & X4. [4 marks]

Balance of Payments item	Euros (millions)
<i>Receipts/Credits</i>	
Goods	231,564
Services	X1 52,877
Income	42,824
Current transfers	6,657
<i>Payments/Debits</i>	
Goods	220,649
Services	56,170
Income	88,231
Current transfers	X2
Trade balance of goods & services	7,622
Net income flows	X3
Net current transfers	-995
Current account Balance	X4

$$X_1 \Rightarrow 7,622 = (231,564 + X_1) - (220,649 + 56,170)$$

$$X_1 = 52,877 \text{ € (millions)}$$

$$X_2 \Rightarrow -995 = 6,657 - X_2$$

$$X_2 = 7,652 \text{ € millions}$$

$$X_3 = 42,824 - 88,231 = -45,407 \text{ € (millions)}$$

$$X_4 = X_2 + 7,822 + X_3 - 995$$

$$= \cancel{71,611} + 7622 - 85,407 - 995 = \cancel{21,128} \text{ E millions} \quad -38780 \text{ E millions}$$

[f] Explain one possible reason for the value of France's Net Income Flow calculated above.

[2 marks]
 Flow of profits from foreign owned businesses in France exceeds flow of profits from French firms abroad back to France

Nigeria is a net exporter of oil and is dependent on it as a major source of export revenue. The table below sets out the average price of oil between 2003 and 2008 and the oil export revenue earned by Nigeria.

Year	Average price of oil (US\$ per barrel)	Index of oil prices	Oil export revenue (US\$ billions)
2003	37	88	20.2
2004	42	100	22.8
2005	46	110	34.1
2006	55	131	38.9
2007	59	140	42.4
2008	95	226	54.6

Using the data in the table answer the following questions.

[g] Calculate the number of barrels of oil sold in 2008.

$$54.6 \text{ billion} / 95 = 0.576 \text{ bn or } 57.67 \text{ million}$$

[h] Using 2004 as a base year, convert the average price of oil into index numbers and complete the table (use whole numbers for the index numbers) [3 marks]

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[i] Explain the impact that the rising oil price might have had on Nigeria's terms of trade.

[4 marks]

Terms of Trade = $\frac{\text{Index of export prices}}{\text{Index of import prices}}$

Terms of trade will improve as oil is a major export for Nigeria & will be weighted accordingly. As price of oil rises - Terms of Trade improves.

Total marks for question 3: 25 marks